

□ MN101CF95F, MN101CF95G

Type	MN101CF95F	MN101CF95G
Internal ROM type	FLASH	
ROM (byte)	96K	128K
RAM (byte)	4K	6K
Package (Lead-free)	TQFP080-P-1212D (Under planning)	TQFP080-P-1212D (Under development)
Minimum Instruction Execution Time	[Standard] 0.2 μs (at 2.7 V to 3.6 V, 10 MHz) 0.5 μs (at 2.7 V to 3.6 V, 4 MHz) 62.5 μs (at 2.7 V to 3.6 V, 32 kHz) [Double speed] 0.1 μs (at 2.7 V to 3.6 V, 10 MHz)	

■ Interrupts

RESET, Watchdog, External 0 to 5, Timer 0 to 8, Time base, Serial 0 reception, Serial 0 transmission, Serial 1 reception, Serial 1 transmission, Serial 2, Serial 3, Serial 4 reception, Serial 4 transmission, Automatic transfer finish, A/D conversion finish, Key interrupts (12 lines)

■ Timer Counter

Timer counter 0 : 8-bit × 1

(square-wave/8-bit PWM output, event count, pulse width measurement, serial clock output, real-time output control, generation of remote control carrier)

Clock source..... 1/2, 1/4 of system clock frequency; 1/1, 1/4, 1/16, 1/32, 1/64 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input

Interrupt source coincidence with compare register 0

Timer counter 1 : 8-bit × 1 (square-wave output, event count, synchronous output event, serial clock output)

Clock source..... 1/2, 1/8 of system clock frequency; 1/1, 1/4, 1/16, 1/64, 1/128 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input

Interrupt source coincidence with compare register 1

Timer counter 0, 1 can be cascade-connected.

Timer counter 2 : 8-bit × 1

(square-wave output, PWM output, event count, pulse width measurement, synchronous timer, serial clock output)

Clock source..... 1/2, 1/4 of system clock frequency; 1/1, 1/4, 1/16, 1/32, 1/64 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input

Interrupt source coincidence with compare register 2

Timer counter 0, 1, 2 can be cascade-connected.

Timer counter 3 : 8-bit × 1 (square-wave output, event count, serial clock output)

Clock source..... 1/2, 1/8 of system clock frequency; 1/1, 1/4, 1/16, 1/64, 1/128 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input

Interrupt source coincidence with compare register 3

Timer counter 2, 3 can be cascade-connected.

Timer counter 0, 1, 2, 3 can be cascade-connected.

Timer counter 4 : 8-bit × 1

(square-wave/8-bit PWM output, event count, pulse width measurement, real-time output control, serial clock output)

Clock source..... 1/2, 1/4 of system clock frequency; 1/1, 1/4, 1/16, 1/32, 1/64 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; 1/1 of external clock input frequency

Interrupt source coincidence with compare register 4

Timer counter 5 : 8-bit × 1

(square-wave/8-bit PWM output, event count, pulse width measurement, serial clock output)

Clock source..... 1/2, 1/8 of system clock frequency; 1/1, 1/4, 1/16, 1/64, 1/128 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency; external clock input

Interrupt source coincidence with compare register 5

Timer counter 4, 5 can be cascade-connected.

Timer counter 6 : 8-bit freerun timer

Clock source..... 1/1 of system clock frequency; 1/1, 1/128, 1/8192 of OSC oscillation clock frequency; 1/1, 1/128, 1/8192 of XI oscillation clock frequency
 Interrupt source coincidence with compare register 6

Timer counter 7 : 16-bit × 1

(square-wave/16-bit PWM output, cycle / duty continuous variable, event count, synchronous output event, pulse width measurement, input capture, real-time output control)

Clock source..... 1/1, 1/2, 1/4, 1/16 of system clock frequency; 1/1, 1/2, 1/4, 1/16 of OSC oscillation clock frequency; 1/1, 1/2, 1/4, 1/16 of external clock input frequency
 Interrupt source coincidence with compare register 7 (2 lines)

Timer counter 8 : 16-bit × 1

(square-wave output, PWM output (duty continuous variable), event count, pulse width measurement, input capture)

Clock source..... 1/1, 1/2, 1/4, 1/16 of system clock frequency; 1/1, 1/2, 1/4, 1/16 of OSC oscillation clock frequency; 1/1, 1/2, 1/4, 1/16 of external clock input frequency
 Interrupt source coincidence with compare register 8 (2 lines)

Time base timer (one-minute count setting)

Clock source..... 1/1 of OSC oscillation clock frequency; 1/1 of XI oscillation clock frequency
 Interrupt source 1/128, 1/256, 1/512, 1/1024, 1/8192, 1/32768 of clock source frequency

Watchdog timer

Interrupt source 1/65536, 1/262144, 1/1048576 of system clock frequency

■ **Serial interface**

Serial 0 : synchronous type / UART (full-duplex) × 1

Clock source..... 1/2, 1/4 of system clock frequency; pulse output of timer counter 1, 2; 1/2, 1/4, 1/16, 1/64 of OSC oscillation clock frequency

Serial 1 : synchronous type / UART (full-duplex) × 1

Clock source..... 1/2, 1/4 of system clock frequency; pulse output of timer counter 2, 3; 1/2, 1/4, 1/16, 1/64 of OSC oscillation clock frequency

Serial 2 : synchronous type / multi-master I²C × 1

Clock source..... 1/2, 1/4 of system clock frequency; pulse output of timer counter 3, 4; 1/2, 1/4, 1/16, 1/32 of OSC oscillation clock frequency

Serial 3 : synchronous type / single-master I²C × 1

Clock source..... 1/2, 1/4 of system clock frequency; pulse output of timer counter 4, 5; 1/2, 1/4, 1/16, 1/32 of OSC oscillation clock frequency

Serial 4 : synchronous type / UART (full-duplex) × 1

Clock source..... 1/2, 1/4 of system clock frequency; pulse output of timer counter 0, 5; 1/2, 1/4, 1/16, 1/64 of OSC oscillation clock frequency

■ **DMA controller**

Max. Transfer cycles : 255
 Starting factor : various types of interrupt, software
 Transfer mode : 1-byte transfer, word transfer, burst transfer

■ **I/O Pins**

I/O	67	Common use , Specified pull-up resistor available, Input/output selectable (bit unit)
-----	----	---

■ **A/D converter**

10-bit × 11-ch. (with S/H)

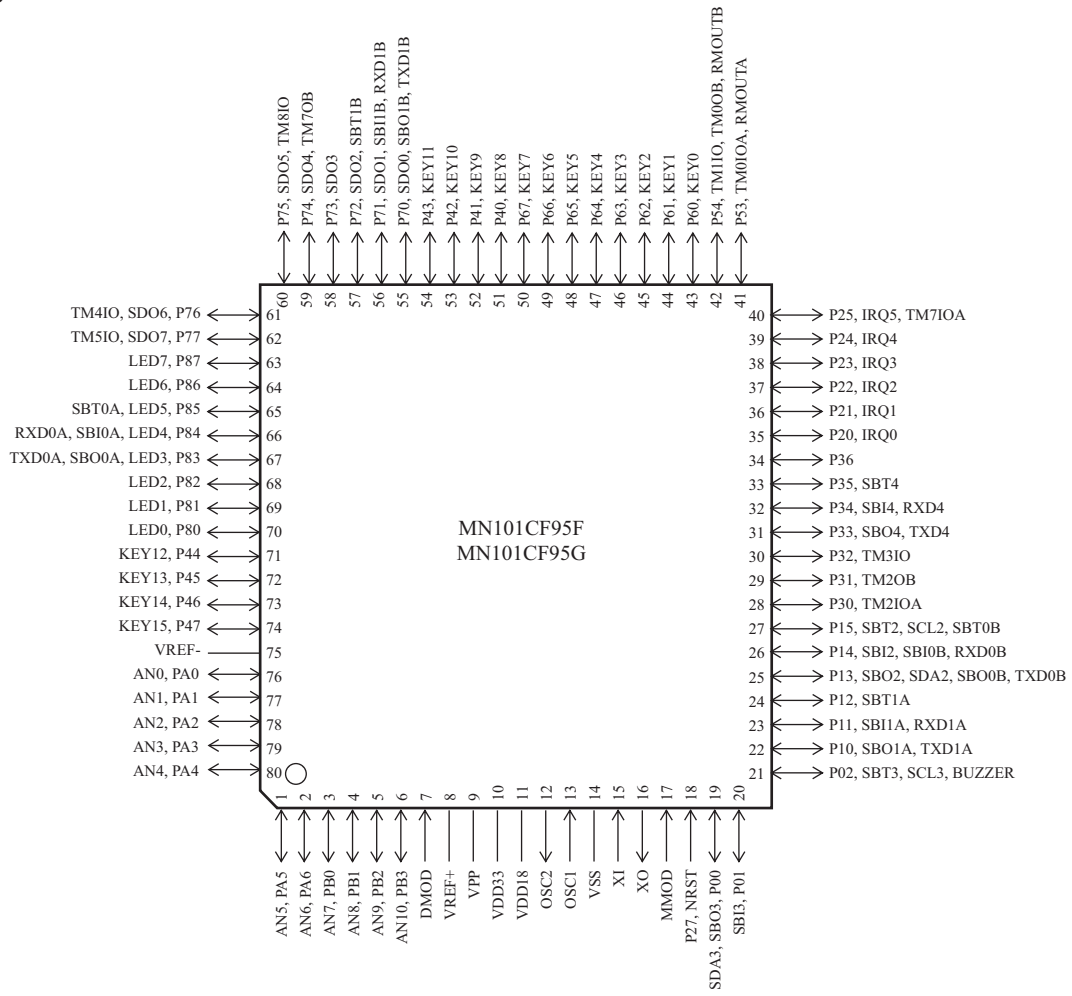
■ **Special Ports**

Buzzer output, remote control carrier signal output, high-current drive port

■ **Development tools**

In-circuit Emulator
 PX-ICE101C/D+PX-PRB101C95-TQFP080-P-1212D

Pin Assignment



TQFP080-P-1212D

Request for your special attention and precautions semiconductors devices

- (1) If any of the products or technical information described in this book is used in the regulations of the exporting country, especially, those with regulations concerning safety, please refer to the regulations of the exporting country.
- (2) The technical information described in this book is intended for general reference only of the products, and no license is granted under any intellectual property rights of our company. Therefore, no responsibility is assumed by our company for any damage or loss of company which may arise as a result of the use of technical information.
- (3) The products described in this book are intended to be used for standard applications such as measuring instruments, test equipment, communications equipment, measuring instruments, etc. Consult our sales staff in advance for information on the following special applications:
 - Special applications (such as for airplanes, aerospace, automotive, medical, etc.) in which exceptional quality and reliability are required.
 - Systems and safety devices in which exceptional quality and reliability are required.
 - Products which may directly jeopardize life or harm the human body.
 - Any applications other than the standard applications intended.
- (4) The products and product specifications described in this book are subject to change without notice for improvement. At the final stage of your design, purchasing, or production, please refer to the latest Standards in advance to make sure that the latest specifications are used.
- (5) When designing your equipment, comply with the range of operating conditions (operating power supply voltage and operating environment etc.) and do not exceed the maximum rating on the transient state, such as power-on, power-off, etc. to prevent defect which may arise later in your equipment.
 - Even when the products are used within the guaranteed values, electrostatic discharge mode, possible to occur to semiconductor products. Measures of electrostatic discharge or preventing glitch are recommended in order to prevent physical damage.
- (6) Comply with the instructions for use in order to prevent breakdown (such as thermal stress and mechanical stress) at the time of handling, etc. If damp-proof packing is required, satisfy the conditions, such as storage, etc.
- (7) This book may be not reprinted or reproduced whether wholly or partially without the permission of Electric Industrial Co., Ltd. Industrial Co., Ltd.